In the claims:

1. (currently amended) A method of providing backup resources for a primary label switched path (LSP) in a label switching network, the primary LSP having at least a portion for transmitting data packets containing a label stack from a first label switching node to a second label switching node, said portion including at least one intermediate label switching node between the first and second nodes, the method comprising the steps of:

defining at least one backup LSP starting from the first node and merged with the primary LSP at the second node, the at least one backup LSP for re-routing data packets around the at least one intermediate label switching node in the event of a failure of the intermediate label switching node;

determining a transformation of the label stack of a packet transmitted along said portion of the primary LSP from an output of the first node to an input of the second node, the transformation including label stack manipulations performed by the at least one intermediate label switching node;

configuring the first node to switch a packet to the backup LSP upon detection of a failure in said portion of the primary LSP; and

configuring at least one node of the backup LSP to process the label stack of any packet transmitted along the backup LSP to apply the same transformation to the label stack on the backup LSP as applied on said portion of the primary LSP so that the label stack received from the backup LSP at an input to the second label switching node corresponds to the label stack received from the portion of the primary LSP at the input of the second label switching node.

2. (previously presented) A method as claimed in claim 1, wherein the node of the backup LSP configured to apply the transformation is the first node, said transformation being applied prior to pushing a label of the backup LSP and including at least one of a label swapping and label popping manipulation.

3. (original) A method as claimed in claim 1, wherein the node of the backup LSP configured to apply the transformation is the second node.

4. (original) A method as claimed in claim 1, wherein the step of determining the transformation of the label stack comprises transmitting messages of a signaling protocol between the nodes of said portion of the primary LSP, including indications of label stack manipulations performed by said nodes on packets transmitted along the primary LSP, said indications being processed at one of the first and second nodes for deriving said transformation.

5. (original) A method as claimed in claim 1, wherein the step of determining the transformation of the label stack comprises transmitting at least one sample packet from the first node to the second node along said portion of the primary LSP.

6. (original) A method as claimed in claim 1, wherein the first node is configured to switch a packet intended for the primary LSP to the backup LSP upon detection of a failure in said portion of the primary LSP up to the intermediate node situated next to the first node.

7. (original) A method as claimed in claim 1, further comprising the steps of: defining at least one switchback LSP from an intermediate node of the primary LSP to the first node; and configuring said intermediate node to switch a packet to the switchback LSP upon detection of a failure in said portion of the primary LSP downstream of said intermediate node and up to the node situated next to said intermediate node.

8. (original) A method as claimed in claim 7, further comprising the step of configuring the first node to switch to the backup LSP any packet received on the switchback LSP.

9. (original) A method as claimed in claim 8, further comprising the steps of: determining a second transformation of the label stack as the inverse of a transformation of the label stack of a packet transmitted along said portion of the primary LSP from the output of the first node to said intermediate node; and configuring at least one node of the switchback LSP to process the label stack of any packet transmitted from said intermediate node along the switchback LSP so as to apply said second transformation.

10. (original) A method as claimed in claim 9, wherein the node of the switchback LSP configured to apply the second transformation is said intermediate node, the second transformation being applied prior to pushing a label of the switchback LSP.

11. (original) A method as claimed in claim 10, wherein the primary LSP has at least one additional intermediate node between the first node and said intermediate node, wherein the switchback LSP is defined to comprise the nodes of the primary LSP, in a reverse direction, from said intermediate node to the first node.

12. (original) A method as claimed in claim 11, further comprising the step of configuring said additional intermediate node to switch a packet to the switchback LSP upon detection of a failure in said portion of the primary LSP downstream of said additional intermediate node and up to the node situated next to said additional intermediate node.

13. (original) A method as claimed in claim 12, further comprising the steps of: determining a third transformation of the label stack as the inverse of a transformation of the label stack of a packet transmitted along said portion of the primary LSP from the output of the first node to said additional intermediate node; and configuring said additional intermediate node to process the label stack of any packet that it switches to the switchback LSP so as to apply said inverse transformation prior to pushing a label of the switchback LSP.

14. (currently amended) A label switching network including a primary label switched path (LSP) having at least a portion for transmitting data packets containing a label stack from a first label switching node to a second label switching node, said portion including at least one intermediate label switching node between the first and second nodes, the network comprising:

means for defining at least one backup LSP starting from the first node and merged with the primary LSP at the second node , the at least one backup LSP for re-routing data packets around the at least one intermediate label switching node in the event of a failure of the at least one intermediate label switching node;

means for determining a transformation of the label stack of a packet transmitted along said portion of the primary LSP from an output of the first node to an input of the second node, the transformation including label stack manipulations performed by the at least one intermediate label switching node;

means for configuring the first node to cause said first node to switch a packet to the backup LSP upon detection of a failure in said portion of the primary LSP; and

means for configuring a node of the backup LSP to cause said node to process the label stack of any packet transmitted along the backup LSP to apply the same transformation to the label stack in the backup LSP as that performed on the label stack of a packet transmitted along said portion of the primary LSP so that the label stack received from the backup LSP at an input to the second label switching node corresponds to the label stack received from the portion of the primary LSP at the input to the second label switching node.

15. (previously presented) A label switching network as claimed in claim 14, wherein the node of the backup LSP configured to apply the transformation is the first node, said transformation being applied prior to pushing a label of the backup LSP and including at least one of a label swapping and label popping manipulation.

16. (original) A label switching network as claimed in claim 14, wherein the node of the backup LSP configured to apply the transformation is the second node.

17. (original) A label switching network as claimed in claim 14, wherein the means for determining the transformation of the label stack comprise means for transmitting messages of a signaling protocol between the nodes of said portion of the primary LSP, including indications of label stack manipulations performed by said nodes on packets transmitted along the primary LSP, and processing means for processing said indications at one of the first and second nodes for deriving said transformation.

18. (original) A label switching network as claimed in claim 14, wherein the means for determining the transformation of the label stack comprise means for transmitting at least one

sample packet from the first node to the second node along said portion of the primary LSP.

19. (original) A label switching network as claimed in claim 14, wherein the first node is configured to switch a packet intended for the primary LSP to the backup LSP upon detection of a failure in said portion of the primary LSP up to the intermediate node situated next to the first node.

20. (original) A label switching network as claimed in claim 14, further comprising: means for defining at least one switchback LSP from an intermediate node of the primary LSP to the first node; and means for configuring said intermediate node to cause said intermediate node to switch a packet to the switchback LSP upon detection of a failure in said portion of the primary LSP downstream of said intermediate node and up to the node situated next to said intermediate node.

21. (original) A label switching network as claimed in claim 20, further comprising means for configuring the first node to cause said first node to switch to the backup LSP any packet received on the switchback LSP.

22. (original) A label switching network as claimed in claim 20, further comprising: means for determining a second transformation of the label stack as the inverse of a transformation of the label stack of a packet transmitted along said portion of the primary LSP from the output of the first node to said intermediate node; and means for configuring a node of the switchback LSP to cause said node to process the label stack of any packet transmitted from said intermediate node along the switchback LSP so as to apply said second transformation.

23. (original) A label switching network as claimed in claim 22, wherein the node of the switchback LSP configured to apply the second transformation is said intermediate node, the second transformation being applied prior to pushing a label of the switchback LSP.

24. (original) A label switching network as claimed in claim 23, wherein the primary LSP has at least one additional intermediate node between the first node and said intermediate node, wherein

the switchback LSP is defined to comprise the nodes of the primary LSP, in a reverse direction, from said intermediate node to the first node.

25. (original) A label switching network as claimed in claim 24, further comprising means for configuring said additional intermediate node to cause said additional intermediate node to switch a packet to the switchback LSP upon detection of a failure in said portion of the primary LSP downstream of said additional intermediate node and up to the node situated next to said additional intermediate node.

26. (original) A label switching network as claimed in claim 25, further comprising: means for determining a third transformation of the label stack as the inverse of a transformation of the label stack of a packet transmitted along said portion of the primary LSP from the output of the first node to said additional intermediate node; and means for configuring said additional intermediate node to cause said additional intermediate node to process the label stack of any packet that it switches to the switchback LSP so as to apply said inverse transformation prior to pushing a label of the switchback LSP.